WE CLAIM

1. A method for multi detector detection of electrons, the method comprising the steps of:
    directing a primary electron beam, through a column, to interact with an inspected object;
    directing, by introducing a substantial electrostatic field, electrons reflected or scattered from the inspected objects towards multiple interior detectors, whereas at least some of the directed electrons are reflected or scattered at small angle in relation to the inspected object; and
    receiving detection signals from at least one interior detector.

2. The method of claim 1 wherein the step of introducing a substantial electrostatic field comprises introducing a first voltage potential difference between the inspected object and a first portion of the column and introducing a second voltage potential difference between a second portion of the column and the inspected object.

3. The method of claim 1 whereas the first portion of the column is positioned below the second portion and wherein the first voltage potential difference is smaller than the second voltage potential difference.

4. The method of claim 1 further comprises a step of processing the received detection signals to provide an indication about a defect or a process variation.

5. The method of claim 1 further comprises a step of varying the substantial electrostatic field to alter the collection zones of the multiple interior detectors.

6. The method of claim 1 wherein the step of directing the primary electron beam comprises at least one tilt.

7. The method of claim 1 wherein the step of directing the primary electron comprises:
    directing the primary electron beam to propagate along an optical axis; tilting the primary electron beam away from the optical axis; and tilting the primary electron beam such as to propagate along a secondary optical axis that is parallel to the optical axis but spaced apart from the optical axis.

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8. The method of claim 7 wherein the step of directing the primary electron beam further comprises tilting the electron beam such as to propagate towards the optical axis and tilting the primary electron beam such as to propagate along the optical axis.

9. The method of claim 1 wherein an inspected area of the inspected object is positioned within the substantial electrostatic lens.

10. The method of claim 1 further comprises a preliminary step of determining a measurement angle between the primary electron beam and the inspected object.

11. The method of claim 10 wherein the measurement angle ranges between acute angles and obtuse angles.

12. The method of claim 1 wherein detected electrons include electrons from a lower portion of a high aspect ratio hole.

13. A system for multi detector detection of electrons, the system comprises:

multiple interior detectors for providing detection signals;

a column through which electrons may propagate; and

means for directing a primary electron beam, through the column, to interact with an inspected object and for directing, by introducing a substantial electrostatic field, electrons reflected or scattered from the inspected objects towards the multiple interior detectors, whereas at least some of the directed electrons are reflected or scattered at small angle in relation to the inspected object.

14. The system of claim 13 the column comprises a first portion that is associated with a first voltage level and a second portion that is associated with a second voltage level.

15. The system of claim 13 whereas the first portion of the column is positioned below the second portion and wherein the first voltage potential difference is smaller than the second voltage potential difference.

16. The system of claim 13 further comprises a processor for processing the received detection signals to provide an indication about a defect or a process variation.

17. The system of claim 13 further adapted to vary the substantial electrostatic field to alter the collection zones of the multiple interior detectors.

18. The system of claim 13 wherein the means for directing the primary electron beam are capable of at least one tilt of the primary electron beam.

19. The system of claim 13 wherein an inspected area of the inspected object is positioned within the substantial electrostatic lens.

20. The system of claim 13 further capable of introducing a tilt between the primary electron beam and the inspected area.

21. The system of claim 13 wherein detected electrons include electrons from a lower portion of a high aspect ratio hole.